Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

TITLE V / SYNTHETIC MINOR (DRAFT) NO. V-05-020
BLUEGRASS ARMY DEPOT
2091 KINGSTON HIGHWAY, RICHMOND KY.
JUNE 24, 2005
D. BRIAN BALLARD, REVIEWER
PLANT I.D. # 021-151-00013
AGENCY INTEREST # 2805
ACTIVITY I.D. # APE2004005

SOURCE DESCRIPTION:

Emission Unit 1 is an 11.7 MM Btu/hour natural gas boiler. The boiler is located in Building 571. The source classification code (SCC) is 1-02-006-02, external combustion boilers, industrial, natural gas – fired, rated between 10 – 100 MM Btu/hour. Criteria pollutant emission factors are from EPA's Factor Information Retrieval (FIRE) database. This boiler was installed in December, 2004 under the authorization of permit # VS-05-001. It is subject to 401 KAR 59:015 and 40 CFR 60, Subpart Dc. The lb/MMBTU allowable for PM is calculated using the method specified in 401 KAR 59:015 § 4 (1)(c). The total heat input capacity (boilers > 1 MMBTU/hour) for the source is 54.7 MMBTU/hour. The lb/MMBTU allowable for SO2 is the standard specified in 40 CFR 60.42c (d).

Emission Units 2 – 6 are portable, Diesel – fired air compressors. Emission Unit 7 is a portable, Diesel – fired, wood grinder. Since each of these generators has a power output of greater than 50 hp and are not limited to 500 hours per year of operation, they do not qualify as insignificant activities. The SCC is 2-03-001-01, internal combustion engines, commercial/institutional, distillate oil (Diesel), reciprocating. Criteria pollutant emission factors are from EPA's Factor Information Retrieval (FIRE) database.

Emission Unit 8 is a portable gasoline – fired air compressor. It does not qualify as an insignificant activity for the same reasons as Emission Units 2 – 7. The SCC is 2-03-003-01 internal combustion engines, commercial/institutional, gasoline, reciprocating. Criteria pollutant emission factors are from EPA's Factor Information Retrieval (FIRE) database.

Emission Unit 9, The Multiple Chamber Incinerator, was constructed under authorization by permit # C-81-4, which was issued January 6, 1981. In the operating permit # O-83-187, issued September 16, 1983, permit conditions specify that the maximum charge rate for the Multiple Chamber Incinerator is 500 lbs/hour and that a maximum of 520 tons/year of Type 1 and Type 2 waste are allowed to be incinerated. The Multiple Chamber Incinerator is equipped with an afterburner.

Type 1 Waste was defined in 401 KAR 3:060§ 2(c) as:
"Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to twenty (20) percent by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes. This type of waste contains twenty-five (25) percent moisture, ten (10) percent incombustible solids and has a heating value of 6500 BTU per pound as fired."

SOURCE DESCRIPTION (CONTINUED):

Type 2 Waste was defined in 401 KAR 3:060§ 2(c) as:
"Refuse consisting of an approximately even mixture of rubbish and garbage by weight. This type of waste is common to apartment and residential occupancy, consisting of up to fifty (50) percent moisture, seven (7) percent incombustible solids, and has a heating value of 4300 BTU per pound as fired."

The description of waste to be burned in the Multiple Chamber Incinerator as described in permit # C-81-4 is:

"Waste to be burned in the incinerator shall include paper, cardboard, wood, paint filters and asphalt/foil cartons."

This excerpt from permit # C-81-4 explains the Division of Air Pollution Control's rationale for deeming the Multiple Chamber Incinerator in compliance with 401 KAR 59:020:

"A copy of a stack test report for a similar incinerator was sent to the Division and approved by the technical services branch. The test report indicates that the unit will comply with the particulate limitations set forth in 401 KAR 59:020."

Permit V-05-020 will require onsite testing of the unit pursuant to 401 KAR 59:020, § 6 and § 7.

Emission Unit 10, The Contaminated Waste Processor (CWP), appears in the permitting record in permit #O-83-187. Permit conditions in O-83-187 specify a maximum charge rate of 300 lb/hour of Type 1 waste. The construction date in the BGAD Title V application received by DAQ on September 20, 2004 lists the construction date as November 16, 1981. The CWP incinerates waste material generated from ammunition processing and handling operations. It flashes metal projectile casings containing small amounts of explosive residue. The unit is equipped with a cyclone and baghouse system for the control of particulate emissions.

In Bluegrass Army Depot's Title V permit application the emission factors for the Multiple Chamber Incinerator and CWP originate from two sources. The emission factors for CO, NO_X PM_{10}/TSP, SO_2 and VOC are based on test data from similar units at other facilities. The emission factors for Arsenic, Cadmium, Chromium, Mercury, Nickel, HCl, and Dioxins/Furans are taken from AP-42 5^{th} edition, Table 2.1-9. The AP-42 emission factors are for Modular Starved-Air Combustors.

Permit V-05-020 will require onsite testing for the determination of PM emissions using EPA Reference Method 5 to for the purpose of initial compliance demonstration with 401 KAR 59:010 § 3(2).

Emission Unit 11 is a large paint booth for aircraft surface coating located in Building 232. There are four paint guns in the paint booth. The paints used are Chemical Agent Resistive Coatings (CARC). There is a shot blasting machine inside the paint booth. The blast media is plastic bead. The fabric filters in the paint booth control PM emissions from the shot blasting operation and from painting operations. The emissions from painting are calculated by a mass balance. A transfer efficiency of 65% is assumed for calculating PM/PM_{10} emissions from painting. A minimum control efficiency of 90% is assumed for the fabric filter. The cleanup solvent is VOC/HAP based.

SOURCE DESCRIPTION (CONTINUED):

Emission Unit 12 is two paint booths located in Building 550 for coating of military munitions. There is one paint gun in each paint booth. The proposed construction date for these paint booths is 2005. The cleanup solvent will be water based. The emissions from painting are calculated by a mass balance. A transfer efficiency of 65% is assumed for calculating PM/PM_{10} emissions from painting. The PM/PM_{10} control equipment is dry filter media, primary and secondary filters back to back. A minimum control efficiency of 90% is assumed for the filters.

Emission Unit 13 is four paint booths located in Building 555 for coating of military munitions. There is one paint gun in three of the paint booths and two paint guns in the fourth paint booth. The cleanup solvent is water and oil based. The emissions from painting are calculated by a mass balance. A transfer efficiency of 65% is assumed for calculating PM/PM_{10} emissions from painting. The PM/PM_{10} control equipment is dry filter media, primary and secondary filters back to back. A minimum control efficiency of 90% is assumed for the filters.

Emission Unit 14 is four paint booths located in Building 562 for coating of military munitions. There is one paint gun in each paint booth. The proposed construction date for these paint booths is 2005. The cleanup solvent will be water based. The emissions from painting are calculated by a mass balance. A transfer efficiency of 65% is assumed for calculating PM/PM_{10} emissions from painting. The PM/PM_{10} control equipment is dry filter media, primary and secondary filters back to back. A minimum control efficiency of 90% is assumed for the filters.

Emission Unit 15 is three paint booths located in Building 1180 for coating of military munitions. There are two paint guns in booth 1 and one paint gun each, in paint booths 2 and 3. The proposed construction date for these paint booths is 2005. The cleanup solvent will be water based. The emissions from painting are calculated by a mass balance. A transfer efficiency of 65% is assumed for calculating PM/PM_{10} emissions from painting. The PM/PM_{10} control equipment is dry filter media, primary and secondary filters back to back. A minimum control efficiency of 90% is assumed for the filters.

For Emission units 12, 14 and 15:
Section G (d) (2) requires that within 15 days following start-up and attainment of the maximum production rate, or within 15 days following the issuance date of V-05-020 (whichever is later), notification of the date of start-up shall be sent to the Regional Office and Central Office.

There are not initial performance test requirements for these units. It will be acceptable to use the commencement of operations (as opposed to the attainment of the maximum production rate) as the date that will be reported to the Division in reference to the Section G (d) (2) notification requirement.

Emission Unit 16, the detonation chamber is a waste military munitions (WMM) treatment unit that destroys military munitions by contained detonation. The detonation chamber is located in Building 280. The emission factors for the detonation chamber are from emission testing conducted at BGAD in August of 2001. These emission tests quantified the emission products released to the environment when M49A4, 60 mm mortars are destroyed in the detonation chamber. The emission factors for the detonation chamber are pounds of pollutant per pound of Net Explosive Weight (NEW). Particulate Matter (PM) emissions from the detonation chamber are controlled through the use of cartridge filters. The PM capture efficiency of the cartridge filter unit is 99.9%. This unit was formerly permitted on permit # S-99-046.

SOURCE DESCRIPTION (CONTINUED):

Emission Units 17 – 20 are shot blasting units. EU17 is located in Building 1180, EU18 is located in

Building 562, EU19 is located in Building 550 and EU 20 is located in Building 555. The shot blast media is steel shot. PM/PM_{10} emissions are calculated using an emission factor of 8 lb PM/PM_{10} per ton of shot processed. The emission factor is referenced from the Bay Area Air Quality Management District (BAAQMD) handbook. The emission factor is for unabated confined abrasive blasting using shot for the abrasive cleaning of metal parts. The control equipment for EU17, EU18 and EU20 is a bag house. The control equipment for EU19 is a cartridge collector. The control efficiencies for the bag houses and cartridge collector are 99.9%.

Emission Unit 21 is seventeen natural gas fired indirect heat exchanger units. These indirect heat exchangers are dispersed in various buildings around BGAD. The capacities range from greater than 1 MMBTU/hr to less than 6 MMBTU/hr. The source classification code (SCC) is 1-03-006-03, external combustion boilers, commercial / institutional, natural gas – fired, rated less then 10 MM Btu/hour. Criteria pollutant emission factors are from EPA's Factor Information Retrieval (FIRE) database. The total heat input capacity for these boilers is 42.99 MMBTU/hour. For the purposes of calculating the PM and SO_2 emission limits determined by 401 KAR 59:015 § 4 (1)(c), it has been assumed that these boilers were all constructed in 1979.

Emission Unit 22 is Open Detonation (OD) of waste military munitions. The source of the emission factors for these activities is detailed in the Blue Grass Army Depot Sub Part "X" Permit Application, Appendix D-6, dated December 2004. The emission factors are expressed as pounds of combustion by-product released per pound of energetic treated. The emission factors originate from the following sources (by pollutant type):

(1) Pollutants – Semi volatile organic compounds (SVOCs), polychlorinated dibenzo-p-dioxins and furans, toxic metals, VOCs, inorganic gases, CO, NO_X and SO_X.
EPA 600/R-98/10: Emission Factors for the Disposal of Energetic Materials by Open Burning and Open Detonation (OB/OD), Mitchell and Suggs, August 1998.

(2) Pollutants – Polycyclic Aromatic Hydrocarbons (PAHs)
Test Detonations of conventional munitions at the U.S. Department of Energy's Nevada Test Site (NTS) X – Tunnel complex located in Area 25 conducted in late 1996 and early 1997.

(3) Pollutants – Metal Oxides
Calculated emission factors are based on mass balance equations assuming that all the metal in the energetic material, as well as the metal that is intended to fragment upon use, is transformed into the corresponding metal oxide.

Open burning of waste military munitions is only permitted in accordance with State Regulation 401 KAR 63:005, § 3(5), when burning occurs "for the prevention of a fire hazard, including the disposal of dangerous materials where no safe alternative is available." The practice of open burning of waste military munitions is an ongoing practice at BGAD per BGAD's Subpart X [40 CFR §§, 264.600-603] application submitted to the Division for Waste Management and Division for Air Quality on December 13, 2004. It is DAQ's assessment that the open burning practices detailed in the Subpart X application are in violation of 401 KAR 63:005.

COMMENTS:

On September 20, 2004, Blue Grass Army Depot (BGAD) submitted two Clean Air Act (CAA) permit applications for the permitting of new and existing facilities located in Richmond,

Kentucky to Kentucky's Division for Air Quality (DAQ).

The submittal includes an application for an operating permit for BGAD. This application covers the existing emission sources and the construction of some new emission sources at BGAD. There is a separate application that pertains to new facilities associated with the chemical agent-destruction pilot plant, which is referred to as the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP).

Existing operations at BGAD and the new BGCAPP facilities are one stationary source as defined under 40 CFR Part 70 (Title V) of the Clean Air Act (CAA). The potential emissions of Carbon Monoxide (CO), Single and Combined Hazardous Air Pollutants, (HAP), Nitrogen Oxides (NO_X), and Volatile Organic Compounds (VOC) exceed major source thresholds as defined in Title V of the CAA.

The BGCAPP CAA application explains in the cover letter that the facilities will be constructed at BGAD, but they will be operated by Bechtel Parsons Blue Grass (BPBG) as a separate entity within the depot. BGAD specifically requests in the BGCAPP CAA application a separate and stand-alone construction and Title V operating permit for BGCAPP. The basis for issuance of a separate Title V permit is provided in the U.S. Environmental Protection Agency Title V guidance memorandum, "Major Source Determinations for Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act," dated August 2, 1996.

DAQ agreed that BGCAPP be issued a separate Title V operating permit, while recognizing that any regulatory applicability determinations for BGAD will be based on total emissions from the existing BGAD operations and the proposed BGCAPP operations.

DAQ will issue two separate Title V permits. This Title V operating permit, Permit # V-05-020, covers the existing operations, the construction of some new surface coating operations and installation of a mobile generator, all of which are part of BGAD and not associated with BGCAPP. BGAD is the permittee and operator for emission units in this permit. A second Title V permit will be issued for the new facilities associated with BGCAPP in which case the permittee is BGAD and the operator is BPBG. Both permits will contain source-wide limits of 90.0 tons per year for VOC, 22.5 tons per year for combined HAPs , 9.0 tons per year for single HAP, 225.0 tons per year for CO and 225.0 tons per year for NO_X . By taking these limits, BGAD will preclude the applicability of 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants, Subpart GG (Aerospace Manufacturing and Rework Facilities), 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants, Subpart DDDDD (Industrial, Commercial, and Institutional Boilers and Process Heaters) and 401 KAR 51:017; Prevention of significant deterioration.

EMISSION AND OPERATING CAPS DESCRIPTION:

The source is subject to an emission cap of 90.0 tons per year for VOC, 9.0 tons per year for single HAP, 22.5 tons per year for combined HAP, 225.0 tons per year for CO and 225.0 tons per year for NO_X.

PERIODIC MONITORING:

Emission Units 9 and 10 have requirements for daily qualitative observation of the opacity of emissions. Monthly monitoring of incinerator charge rates and hours of operation is required for

Emission Units 9 and 10.
Emission Units 11 through 15 have requirements for weekly qualitative observation of the opacity of emissions and either daily monitoring of paint booth filter pressure drop or visual inspection of paint booth filters for solids build-up.
Emission Unit 16 has a requirement for weekly qualitative observation of the opacity of emissions and daily monitoring of cartridge filter house pressure drop. Daily monitoring of processing rates and hours of operation is required for Emission Unit 16.
Emission Units 17 through 20 have requirements for either daily monitoring of bag house or cartridge filter house pressure drop or a daily visual inspection of the unit.
Emission Unit 22 has a requirement for the annual monitoring of the Net Explosive Weight (NEW) of military munitions processed by open detonation.

OPERATIONAL FLEXIBILITY:
Not Applicable.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.